

## INCREASED RESPONSIVITY PHOTODETECTOR

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ABSTRACT

A photodetector includes a high-indium-concentration (H-I-C) absorption layer having a Group III sublattice indium concentration greater than 53%. The H-I-C absorption layer improves responsivity without decreasing bandwidth. The photoconversion structure that includes the H-I-C absorption layer can be formed on any type of substrate through the use of a metamorphic buffer layer to provide a lattice constant gradient between the photoconversion structure and the substrate. The responsivity of the photodetector can be further improved by passing an incoming optical signal through the H-I-C absorption layer at least twice.